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| 10/556,359 | 03/15/2007 | Vincent Fischetti | 600-1-297PCTUS | 4262 |

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| EXAMINER | |
|---|---|
| KINSEY WHITE, NICOLE ERIN | |
| ART UNIT | PAPER NUMBER |
| 1648 | |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/556,359 | FISCHETTI ET AL. | |
| | Examiner | Art Unit | |
| | NICOLE KINSEY WHITE | 1648 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on *03 December 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) *1,2,8-11 and 13-30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *3,4 and 6* is/are rejected.

7)☒ Claim(s) *5,7 and 12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 November 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

Applicants' election without traverse of Group I (claims 3-7 and 12-13) in the reply filed on December 3, 2007 is acknowledged.

### *Claim Objections*

Claim 12 is objected to because of the following informalities: Claim 12 recites "isolated polypeptides" instead of "isolated polypeptide." Appropriate correction is required.

Claim 13 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only and cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, claim 13 will not been further treated on the merits.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in

the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are drawn to, *inter alia*, an isolated PlyC lysin polypeptide, wherein said polypeptide comprises multiple copies of one or both subunits and fragments, mutants, variants, analogs or derivatives thereof.

The written description rejection is made because the claims are interpreted as being drawn to a genus of products recited as "fragments, mutants, variants, analogs or derivatives thereof." The applicable standard for the written description requirement can be found in MPEP 2163; University of California v. Eli Lilly, 43 USPQ2d 1398 at 1407; PTO Written Description Guidelines; Enzo Biochem Inc. v. Gen-Probe Inc., 63 USPQ2d 1609; Vas- Cath Inc. v. Mahurkar, 19 USPQ2d 1111; and University of Rochester v. G.D. Searle & Co., 69 USPQ2d 1886 (CAFC 2004). To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. In this case, the only factors present in the claims are PlyC from C1 bacteriophage and SEQ ID NOs:9 and 11. There is no disclosure of any particular portion of the PlyC, PlyC subunits or SEQ ID NOs:9 and 11 that must be conserved (or changed) to be " fragments, mutants, variants, analogs or derivatives thereof."

Accordingly, in the absence of sufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate written description of the claimed genus.

The specification discloses at paragraphs [0045] to [0046] and [0048] the definitions of fragments, mutants, variants, analogs or derivatives. However, none of these definitions provides sufficient guidance to one of ordinary skill in the art which portions of the polypeptides can serve as a fragment or which portions (or amino acids) can be mutated or changed and still retain the desired lysin activity. Where can substitutions, deletions or insertions be made within the disclosed sequences? What parts of the protein are essential for the recited activity? Applicants have not disclosed any polypeptides or peptides that are fragments, mutants, variants, analogs or derivatives thereof.

The court clearly states in Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, whatever is now claimed." (See page 1117.) The specification does not clearly allow persons of ordinary skill in the art to recognize that the inventors invented what is claimed. As discussed above, the skilled artisan cannot envision the detailed chemical structure of the encompassed genus of fragments, mutants, variants, analogs or derivatives. Given that the specification has only described the structure of the claimed polypeptide, the full breadth of the claims does not meet the written description provision of 35 U.S.C. 112, first paragraph.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 3, 4 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Nelson et al. (U.S. Patent No. 6,608,187).

The claims are drawn to an isolated polypeptide comprising an amino acid sequence of a C1 bacteriophage PlyC lytic enzyme (lysin).

Nelson et al. discloses purified C1 bacteriophage lysin protein (see col. 3, lines 40-58 and Example 1) with a molecular mass of approximately 100 kDa. The lysin of Nelson et al. is specific for group C streptococci. Nelson et al. further discloses fragments, analogs or derivatives of the lysin protein (see, for example, col. 12, line 49 to col. 13, line 5).

Claims 3 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Fischetti et al. (U.S. Patent No. 6,056,955).

Fischetti et al. discloses harvesting and isolating lysin from group C streptococcal organisms after being infected with C1 bacteriophage (see col. 4, lines 26-49).

Claims 3 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Fischetti et al. (U.S. Patent No. 6,326,002).

Fischetti et al. discloses the isolation of lysin from group C streptococcal organisms after being infected with C1 bacteriophage (see col. 13, line 62 to col. 14, line 38).

Claims 3, 4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Nelson et al. (PNAS, 2001, 98(7):4107-4112).

The claims are drawn to an isolated polypeptide comprising an amino acid sequence of a C1 bacteriophage PlyC lytic enzyme (lysin).

Nelson et al. discloses purified C1 bacteriophage lysin protein with a molecular mass of approximately 100 kDa (see page 4108). The lysin of Nelson et al. is specific for group C streptococci.

***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 3 and 4 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 22 and 23 of U.S. Patent No. 6,056,955. Although the conflicting claims are not identical, they are not patentably distinct from each.

The patented claims are drawn to a composition for the treatment of dermatological streptococcal infections comprising:

an effective amount of a therapeutic agent, said therapeutic agent comprising a lysin enzyme produced by group C streptococcal bacteria infected with a C1 bacteriophage, and

a pharmaceutically acceptable carrier for topical application of the lysin enzyme, wherein the carrier can be an aqueous liquid.

The instant claims are directed to an isolated polypeptide comprising an amino acid sequence of a C1 bacteriophage PlyC lytic enzyme.

A composition comprising the lysin from C1 bacteriophage as the active ingredient and the instantly claimed isolated lysin from C1 bacteriophage are obvious over each other because adding a pharmaceutically acceptable carrier (e.g., water) to the lysin from C1 bacteriophage does not render the resulting composition patentably distinct from the instantly claimed isolated lysin from C1 bacteriophage.

Claims 3 and 4 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 2 of U.S. Patent No. 5,997,862. Although the conflicting claims are not identical, they are not patentably distinct from each.

The patented claims are drawn to a pharmaceutical composition for use in the treatment of a streptococcal infection, comprising:

an effective amount of lysin enzyme produced by group C streptococcal bacteria infected with a C1 bacteriophage; and

a carrier for delivering said lysin enzyme to a mouth, throat, or nasal passage, wherein the carrier can be candy, chewing gum, lozenge, troche, tablet, powder, aerosol, liquid, liquid spray, nasal spray and nasal ointments.

The instant claims are directed to an isolated polypeptide comprising an amino acid sequence of a C1 bacteriophage PlyC lytic enzyme.

A composition comprising the lysin from C1 bacteriophage as the active ingredient and the instantly claimed isolated lysin from C1 bacteriophage are obvious over each other because adding a pharmaceutically acceptable carrier (e.g., water) to the lysin from C1 bacteriophage does not render the resulting composition patentably distinct from the instantly claimed isolated lysin from C1 bacteriophage.

Claims 3 and 4 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 2 of U.S. Patent No. 6,017,528. Although the conflicting claims are not identical, they are not patentably distinct from each.

The patented claims are drawn to a composition for use in the therapeutic or prophylactic treatment of a Group A streptococcal infection, comprising:

an effective amount of lysin enzyme produced by Group C streptococcal bacteria infected with a C1 bacteriophage; and

a carrier for delivering said lysin enzyme to a mouth, throat, or nasal passage of a mammal, wherein the carrier can be candy, chewing gum, lozenge, troche, tablet, powder, aerosol, liquid, liquid spray, nasal spray and nasal ointments.

The instant claims are directed to an isolated polypeptide comprising an amino acid sequence of a C1 bacteriophage PlyC lytic enzyme.

A composition comprising the lysin from C1 bacteriophage as the active ingredient and the instantly claimed isolated lysin from C1 bacteriophage are obvious over each other because adding a pharmaceutically acceptable carrier (e.g., water) to the lysin from C1 bacteriophage does not render the resulting composition patentably distinct from the instantly claimed isolated lysin from C1 bacteriophage.

Claims 3 and 4 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 2 of U.S. Patent No. 6,423,299 in view of Nelson et al. (PNAS, 2001, 98(7):4107-4112). Although the conflicting claims are not identical, they are not patentably distinct from each.

The patented claims are drawn to an aerosol composition for treating bacterial infections of the respiratory tract by delivering said aerosol to the mouth, throat or nasal passage, wherein the bacteria to be treated is selected from the group consisting of Streptococcus pneumoniae, Haemophilus influenzae, Streptococcus Group A, and combinations thereof, said aerosol comprising (i) an effective amount of at least one lytic enzyme genetically coded by a bacteriophage specific for a specific said bacteria of the respiratory tract, whereby said at least one lytic enzyme has the ability to digest the cell wall of said specific bacteria; and (ii) a carrier for delivering said enzyme.

The instant claims are directed to an isolated polypeptide comprising an amino acid sequence of a C1 bacteriophage PlyC lytic enzyme.

Nelson et al. teaches that lysin from C1 bacteriophage causes lysis of groups A, E and C streptococci and that lysin from C1 bacteriophage can be used to prevent and

eliminate upper respiratory colonization by group A streptococci. Therefore, it would have been obvious to one of ordinary skill in the art to select lysin from C1 bacteriophage as suggested by Nelson et al. to use in a composition for treating group A streptococci infections of the respiratory tract. There would have been a reasonable expectation of success given the fact that it is well known it the art that lysin from C1 bacteriophage is effective against streptococci.

Claims 3 and 4 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 2 of U.S. Patent No. 6,277,399 in view of Fischetti et al. (WO 01/19391). Although the conflicting claims are not identical, they are not patentably distinct from each.

The patented claims are drawn to a composition for treating bacteria infecting burns and wounds of the skin, comprising:

(a) an effective amount of at least one lytic enzyme produced by a bacteria infected with a bacteriophage specific for said bacteria, said lytic enzyme having the ability to digest a cell wall of said bacteria; and

(b) a topical carrier for delivering said at least one lytic enzyme to the skin, wherein the mode of delivery of said composition is selected from the group consisting of a time-release patch, a bandage, and combinations thereof, wherein said carrier can be an aqueous liquid.

The instant claims are directed to an isolated polypeptide comprising an amino acid sequence of a C1 bacteriophage PlyC lytic enzyme.

Fischetti et al. teaches that lysin from C1 bacteriophage causes lysis of groups A, E and C streptococci and that lysin from C1 bacteriophage can be used to fight a streptococcal infection, particularly those infections, such as impetigo, which result in invasive fasciitis, necrotizing fasciitis, and the streptococcal form of cellulitis (see page 4, lines 6-23 and pages 5-6). Therefore, it would have been obvious to one of ordinary skill in the art to select lysin from C1 bacteriophage as suggested by Fischetti et al. to use in a composition for treating group A streptococci infections of the skin. There would have been a reasonable expectation of success given the fact that it is well known it the art that lysin from C1 bacteriophage is effective against streptococci.

Claims 5 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLE KINSEY WHITE whose telephone number is (571)272-9943. The examiner can normally be reached on Monday through Friday from 8:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bruce Campell can be reached on (571) 272-0974. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nicole Kinsey White, PhD/
Examiner, Art Unit 1648

/Bruce Campell/
Supervisory Patent Examiner, Art Unit 1648